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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,084	02/11/2004	Satoru Horita	P24784	1599
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EXAMINER HERNANDEZ, NELSON D				
ART UNIT 2622		PAPER NUMBER		
NOTIFICATION DATE 12/10/2008		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/775,084

Applicant(s)

HORITA, SATORU

Examiner

Nelson D. Hernández Hernández

Art Unit

2622

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-6, 8 and 9 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI-08)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed August 15, 2008 have been fully considered but they are not persuasive.
2. The Applicant argues the following:
 - a. Whereas TSUCHIYA et al. appears to disclose recursively performing a low-pass filtering process, this recursive filtering process is performed only to compress a dynamic range of signals, and not for edge-enhancement. As disclosed in paragraph 0012 of TSUCHIYA et al., a pixel value of an input image is smoothed while preserving an edge of the input image to obtain a gain correction coefficient.
 - The Examiner disagrees. By teaching the concept of recursively applying a filtering process to image data, in which the image data is smoothed while preserving the edges, Tsuchiya et al. discloses performing low-pass filtering and an edge-enhancement filtering recursively since in Tsuchiya et al. the edges are taken in consideration to filter the entire image. Since the smoothing process is being applied only to portions that do not include an edge, the filtering process in Tsuchiya et al. is also considered and edge enhancement in which said edges are protected from the smooth filtering process. Furthermore, the claim is not clear on how the edges are being enhanced (whether they are becoming more noticeable or larger, thinner (or increased toward black as shown in the Specification of the present Application)), and although the claims are interpreted

in light of the specification, limitations from the specification are not read into the claims. In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, the Examiner is giving the claims a broadest reasonable interpretation to read the recursive filtering process in Tsuchiya et al. (in which a smoothing filter is applied taking in consideration the position of the edges to protect them against the smoothing filter and preserve them) as recursively performing low-pass filter and edge-enhancement filter to filter the luminance components as claimed.

b. Further in this regard, TSUCHIYA et al. discloses at paragraph 0040 that the non-linear smoothing unit 2 performs only the smoothing processing of components having small amplitudes and does not perform the smoothing processing of edge components which may have large amplitudes. Consequently, the non-linear smoothing unit 2 smoothes the pixel value (i,j) of the input image X while preserving the edge to take out only the component determining the dynamic range of the image X separately. As discussed in the specification of the present application at page 14, lines 5-20, the pixel value of an outline portion of objects or features is increased toward black by virtue of the edge enhancement filter. In contrast, the filtering process of TSUCHIYA et al. does not recursively use an edge enhancement filter, as recited in claim 1 of the present application. Claims 8 and 9 of the present application are allowable for at least similar reasons.

- As explained above, since the smoothing process is being applied only to portions that do not include an edge, the filtering process in Tsuchiya et al. is also considered and edge enhancement in which said edges are protected from the smooth filtering process (noting that the claim is not clear on how the edges are being enhanced (whether they are becoming more noticeable or larger, thinner (or increased toward black as shown in the Specification of the present Application))).
 - Furthermore, In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the pixel value of an outline portion of objects or features is increased toward black by virtue of the edge enhancement filter) are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).
- c. Further, by performing the smoothing processing while preserving the edge, TSUCHIYA et al. teaches away from the claimed image altering process. Moreover, the teachings of YAMAZOE et al. and TSUCHIYA et al. are contradictory in this regard, such that it would be unobvious and thus improper to propose the combination; i.e., it is improper to combine references where the references teach away from their combination. In re Grasselli, 713 F. 2d 731,743,218 USPQ 769,779 (Fed. Cir. 1983). The Supreme Court, in KSR

International Co. v. Teleflex Inc., 550 U.S. ___, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007), supported this proposition.

➤ The Examiner disagrees. The Examiner understands that the Tsuchiya et al. reference as applied does not teach away from the claimed image altering process since as explained above, the smoothing process is being applied only to portions that do not include an edge, therefore the filtering process in Tsuchiya et al. is also considered and edge enhancement in which said edges are protected from the smooth filtering process. Furthermore, the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004). Therefore, the Tsuchiya et al. reference as interpreted by the Examiner meets the limitations of having the low-pass filter process and edge-enhancement filter process recursively performed a plurality of times.

3. The Examiner understands that the combined teaching of Yamazoe et al. in view of Tsuchiya et al. as applied to **claims 1, 2, 8 and 9** are proper. Therefore, the rejections are maintained.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazoe et al., EP 1014688 A2 in view of Tsuchiya et al., US 2002/0047911 A1.

Regarding claim 1, Yamazoe et al. discloses an image-processing device (See fig. 1), comprising: an input device (Fig. 1: 111) that inputs video signals of an original color image; and an image-processing unit (CPU 108) that carries out a predetermined image altering process on luminance components of said video signals (Col. 8, ¶ 0048 – col. 11, ¶ 0061; see also col. 18, ¶ 0109 – col. 19, ¶ 0113); wherein said luminance components, subjected to said image altering process, and color-difference components of said video signals are combined (Col. 8, ¶ 0048 – col. 11, ¶ 0061; see also col. 18, ¶ 0109 – col. 19, ¶ 0113; see also col. 6, ¶), so that video signals for an illustrational image in which the outlines of image features are made bold (Col. 9, ¶ 0055 – col. 10, ¶ 0059), and the number of colors is reduced with respect to the number of colors in said original color image, are generated (Col. 9, ¶ 0055 – col. 10, ¶ 0059) (Col. 6, ¶ 0036 – col. 12, ¶ 0073; see also col. 18, ¶ 0109 – col. 19, ¶ 0113). Yamazoe et al. further discloses said image altering process includes filtering processes in which a low-pass filter and an edge-enhancement filter are used to filter said luminance components, and

a gradation-reduction process (to reduce the amount of tone levels) that reduces the steps of said luminance components (Col. 8, ¶ 0048 – col. 11, ¶ 0061; see also col. 18, ¶ 0109 – col. 19, ¶ 0113).

Yamazoe et al. does not explicitly disclose that said filtering processes are recursively performed a plurality of times.

However, Tsuchiya et al. discloses the concept of applying a filtering process to image data, in which a low-pass filter and an edge-enhancement filter are used to filter the image signal, wherein said filtering process is performed recursively so as to perform an smoothing processing in which only a specific frequency component is selectively left in such a smoothed image, and the deterioration of the image quality of the output image can effectively be evaded in that degree; and to generate the smoothed image that is sufficiently smoothed in a wide frequency band while the edge information thereof is preserved (Page 6, ¶ 0088-0096; Tsuchiya et al. discloses providing the image signal to a filtering circuit (See fig. 8), wherein the filtering circuit comprising a low pass (Fig. 8: 11) filter and a plurality of improved filters (see fig. 8) that would apply a repeatedly filtering to the image signal to smooth the image while preserving the edges. This teaches the concept of recursively filtering the image data for a plurality of times in which the filtering process comprises low-pass filtering and edge enhancement filtering).

Therefore, taking the combined teaching of Yamazoe et al. in view of Tsuchiya et al. as a whole, it would have been obvious to one of an ordinary skill in the art at the time the invention was made to apply the concept of recursively filtering the image data

in which the filtering process comprises low-pass filtering and edge enhancement filtering as taught in Tsuchiya et al. to modify the teaching of Yamazoe et al. to perform recursively said filtering process for a plurality of times. The motivation to so would have been to perform an smoothing processing in which only a specific frequency component is selectively left in such a smoothed image, and the deterioration of the image quality of the output image can effectively be evaded in that degree; and to generate the smoothed image that is sufficiently smoothed in a wide frequency band while the edge information thereof is preserved as suggested by Tsuchiya et al. (Page 6, ¶ 0088-009).

Regarding claim 2, Yamazoe et al. discloses said image altering process includes a gradation-reduction process (to reduce the amount of tone levels) that reduces the steps of said luminance components (Col. 8, ¶ 0048 – col. 11, ¶ 0061; see also col. 18, ¶ 0109 – col. 19, ¶ 0113).

Regarding claim 8, claim 8 is a method claim of the apparatus in claim 1. Limitations have been discussed and analyzed in claim 1.

Regarding claim 9, claim 9 requires a program product stored in a computer readable medium that when executed by the computer would perform an image processing as in claim 1. Limitations are discussed and analyzed in claim 1. Furthermore, Yamazoe et al. discloses the image processing as a program stored in a computer memory (Col. 4, ¶ 0023-0028) that when executed performs the same operations as in claim 1.

6. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazoe et al., EP 1014688 A2 in view of Tsuchiya et al., US 2002/0047911 A1 as applied to claim 1 above and further in view of Greggain, US Patent 5,602,599.

Regarding claim 4, the combined teaching of Yamazoe et al. in view of Tsuchiya et al. fails to teach that said image-processing unit further carries out a resolution reduction process that reduces the number of pixels in said original color image before carrying out said filtering processes and a resolution restoring process that restores the number of pixels to said number of pixels in said original color image after carrying out said filtering processes.

However, Greggain discloses filtering device (Figure 1) which filters an original image (column 2, lines 6-8; input digital image stored in image frame store 1 provides an original image), comprising: a reducing processor (resizing apparatus 3; column 2, lines 8-16) that reduces the number of pixels forming said original image (1) so as to generate a low-resolution image (image with reduced number of pixels results into a low resolution image); a filtering processor (column 2, lines 17-33; by removing spatial frequency from the reduced image provides filtering) that filters pixel data of pixels forming said low- resolution image so as to transform said low-resolution image into a filtered image; and an image restoring processor (resized apparatus 5 corresponds to an image restoring processor; column 2, lines 19-33) that restores the number of pixels forming said filtered image to the number of pixels forming said original image so as to generate a restored image (Col. 2, line 16 – col. 4, line 28).

Therefore, taking the combined teaching of Yamazoe et al. in view of Tsuchiya et al. and further in view of Greggain as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yamazoe et al. and Tsuchiya et al. by having said image processing unit carrying out a resolution reduction process that reduces the number of pixels in said original color image before carrying out said filtering processes and a resolution restoring process that restores the number of pixels to said number of pixels in said original color image after carrying out said filtering processes. The motivation to do so would have been to increase the speed of the filtering process by applying the filters to a reduced image while taking advantage of the inherent accurate filtering that would reduce the aliasing and image distortion as suggested by Greggain (Col. 1, lines 45-55).

Regarding claim 5, the combined teaching of Yamazoe et al. in view of Tsuchiya et al. and further in view of Greggain as discussed and analyzed in claim 4 would result in the limitations as claimed since the filtering process that includes the low-pass filter and an edge-enhancement filter are used to filter said luminance components, and a gradation-reduction process that reduces the steps of said luminance components (See Yamazoe et al, col. 8, ¶ 0048 – col. 11, ¶ 0061; see also col. 18, ¶ 0109 – col. 19, ¶ 0113) would be performed before restoring the size of the image (Greggain, col. 2, line 16 – col. 4, line 28). Grounds for rejecting claim 4 apply here.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazoe et al., EP 1014688 A2 and Tsuchiya et al., US 2002/0047911 A1 in view of Greggain, US Patent 5,602,599 and further in view of Isono et al., US Patent 6,873,348 B1.

Regarding claim 6, the combined teaching of Yamazoe et al. in view of Tsuchiya et al. and further in view of Greggain fails to teach that the image-processing unit carries out said resolution restoring process before carrying out said gradation-reduction process.

However, Isono et al. discloses an image processing method wherein the image data is analyzed before performing enlargement in order to correct the gradation said image data after performing said enlargement with the purpose of correcting blurriness of the enlarged image data that would result as a result of said enlargement (Col. 18, line 29 – col. 19, line27).

Therefore, taking the combined teaching of Yamazoe et al. and Tsuchiya et al. in view of Greggain in view of Isono et al as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Yamazoe et al, Tsuchiya et al. and Greggain by having the image-processing unit carrying out said resolution restoring process before carrying out said gradation-reduction process. The motivation to do so would have been to improve the image-processing device by allowing correction of any blurriness obtained as a result of enlarging the image, thus improving the image quality of said image.

Allowable Subject Matter

8. **Claim 7** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 7, the main reason for indication of allowable subject matter is because the prior art fails to teach or reasonably suggest, that said image-processing unit carries out said low-pass filtering process, said edge-enhancement filtering process, and said gradation-reduction process in this order in a first mode, and wherein said image-processing unit carries out a resolution reduction process that reduces the number of pixels in said original color image, said low-pass filtering process, said edge-enhancement filtering process, said gradation-reduction process, and a resolution restoring process that restores the number of pixels to said number of pixels in said original color image, in this order in a second mode, including all the limitations in claims 1 and 2.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernández Hernández whose telephone number is (571)272-7311. The examiner can normally be reached on 9:00 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nelson D. Hernández Hernández
Examiner
Art Unit 2622

NDHH
December 5, 2008

/Lin Ye/
Supervisory Patent Examiner, Art Unit 2622